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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/528,054

03/17/2005

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EXAMINER

CHOI, LING SIU

ART UNIT

PAPER NUMBER

1713

MAIL DATE

DELIVERY MODE

07/02/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/528,054	Applicant(s) KONISHI ET AL.	
	Examiner Ling-Siu Choi	Art Unit 1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 11-19 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-6 is/are allowed.
- 6) ☒ Claim(s) 7-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is in response to the Amendment filed 04/16/2007. Claims 1-19 are now pending. In view of the Amendment, rejections of claims 1-6 are withdrawn. Since the rejections of claims 7-10 are based on a new ground, the present Office Action is made as a second non-final rejection.

Claim Analysis

2. Summary of claim 7:

A chlorinated polyolefin produced by a process according to claim 1 or 2, wherein the chlorinated polyolefin has	
a crystal heat of fusion	no greater than 30 j/g according to DSC

Claim Rejections - 35 USC § 102/103

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The caselaw has held that "[t]he patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). It is noted that claims 7-10 are drawn to a product. Thus, the process to make the product cited in the claims does not carry a patentable weight.

5. Claims 7-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Jones et al. (US 4,767,823).

Jones et al. disclose a process to chlorinate polyethylene having a weight-based median particle size of from about 120 to about 600 microns, wherein the chemically combined chlorine content is from 15 to about 28 wt% (abstract). Attention is drawn to Table VI, wherein the Samples 3, 4, and 5 have the chlorine content of 21.4, 23.7, and 26.2 wt% respectively and the heat of fusion of 1.13, 2.59, and 0.09 cal/g (1 J = 0.2390 cal) respectively. It is noted that Jones et al. are silent on the specific properties. In view of the product disclosed by Jones et al. being substantially identical to one disclosed in the present claims, the present product would possess the specific properties. Since PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicants to show otherwise. *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); *In re Fitzgerald* 205 USPQ 594 (CCPA 1980).

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6. Claims 7-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Aystetten et al. (US 3,856,766). Aystetten et al. disclose a process to make a light colored thermostable chloropolyolefin by chlorinating pulverulent polyethylene, polypropylene, or a copolymer of ethylene with a straight chain or branched α -olefin with gaseous chlorine, wherein the particle size of the pulverulent polymer is in the range of from about 40 to 500 micron and these polymers are produced by high pressure, medium pressure or low pressure polymerization process (abstract; col. 1, lines 61-63). Attention is drawn to Table, wherein the amounts of chlorine are 36.7 wt% (Example 1) and 41.9 wt% (Example 2). It is noted that Aystetten et al. are silent on the specific properties. In view of the product disclosed by Aystetten et al. being substantially identical to one disclosed in the present claims, the present product would possess the specific properties. Since PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicants to show otherwise. *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); *In re Fitzgerald* 205 USPQ 594 (CCPA 1980).

7. Claims 7 and 9-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Rifi (US 4,593,075).

Rifi discloses a process to modify ethylene polymers by reacting granular ethylene polymers having a density of about 0.87 to about 0.92 g/cc with a gaseous chlorinating agent to produce the chlorinated polymers, wherein the particle size of the granular ethylene is exemplified to be 500 or 400 microns (abstract; col. 4, line 14 [A or

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B]). However, Rifi does not teach or fairly suggest a process comprising (A) a step of melting, kneading, molding, and pulverizing the solid into powder (claim 1) and (B) a step of chlorination at above the crystal melting start temperature and more than 10°C below the crystal melting peak temperature of the polyolefin before the heat treatment (claims 2-6). It is noted that Rifi is silent on the specific properties. In view of the product disclosed by Rifi being substantially identical to one disclosed in the present claims, the present product would possess the specific properties. Since PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicants to show otherwise. *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); *In re Fitzgerald* 205 USPQ 594 (CCPA 1980).

8. Claims 7-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Benedikt et al. (US 4,473,451).

Benedikt et al. disclose a process for chlorination of powdered polyethylene with chlorine at an initial temperature from about 20°C to about 70°C and raising the temperature of the reaction to at least about the crystalline melting point of the polyethylene and continuing the reaction until the polyethylene contains greater than 25-45 wt% bound chlorine, wherein the polyethylene can be low density, high density, linear, or branched and has density from about 0.90 to 0.97 the average particle size; the average particle size is preferably 100 microns to less than 600 microns (abstract; col. 2, lines 30-51). It is noted that Benedikt et al. are silent on the specific properties. In view of the product disclosed by Benedikt et al. being substantially identical to one

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disclosed in the present claims, the present product would possess the specific properties. Since PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicants to show otherwise. *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); *In re Fitzgerald* 205 USPQ 594 (CCPA 1980).

Allowable Subject Matter

9. Claims 1-6 are allowable over the closest references: Jones et al. (US 4,767,823), Aystetten et al. (US 3,856,766), Rifi (US 4,593,075), and Benedikt et al. (US 4,473,451).

Jones et al. disclose a process to chlorinate polyethylene having a weight-based median particle size of from about 120 to about 600 microns, wherein the chemically combined chlorine content is from 15 to about 28 wt% (abstract). Attention is drawn to Table VI, wherein the Samples 3, 4, and 5 have the chlorine content of 21.4, 23.7, and 26.2 wt% respectively and the heat of fusion of 1.13, 2.59, and 0.09 cal/g (1 J = 0.2390 cal) respectively. However, Jones et al. do not teach or fairly suggest a process comprising (A) a step of melting, kneading, molding, and pulverizing the solid into powder (claim 1) and (B) a step of chlorination at above the crystal melting start temperature and more than 10°C below the crystal melting peak temperature of the polyolefin before the heat treatment (claims 2-6).

Aystetten et al. disclose a process to chlorinate a polyethylene having an ultimate melting point of 136°C, comprising subjecting the polyethylene to a heat treatment by

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heating in a nitrogen to about 122°C and keeping at that temperature for 15 minutes; cooling down the polyethylene; and chlorinating the resulting polyethylene with chlorine at a temperature gradually raised to 137°C (Example 1). However, Aystetten et al. do not teach or fairly suggest a process comprising (A) a step of melting, kneading, molding, and pulverizing the solid into powder (claim 1) and (B) a step of chlorination at above the crystal melting start temperature and more than 10°C below the crystal melting peak temperature of the polyolefin before the heat treatment (claims 2-6).

Rifi discloses a process to modify ethylene polymers by reacting granular ethylene polymers having a density of about 0.87 to about 0.92 g/cc with a gaseous chlorinating agent to produce the chlorinated polymers, wherein the particle size of the granular ethylene is exemplified to be 500 or 400 microns (abstract; col. 4, line 14 [A or B]). However, Rifi does not teach or fairly suggest a process comprising (A) a step of melting, kneading, molding, and pulverizing the solid into powder (claim 1) and (B) a step of chlorination at above the crystal melting start temperature and more than 10°C below the crystal melting peak temperature of the polyolefin before the heat treatment (claims 2-6).

Benedikt et al. disclose a process for chlorination of powdered polyethylene with chlorine at an initial temperature from about 20°C to about 70°C and raising the temperature of the reaction to at least about the crystalline melting point of the polyethylene and continuing the reaction until the polyethylene contains greater than 25-45 wt% bound chlorine, wherein the polyethylene can be low density, high density, linear, or branched and has density from about 0.90 to 0.97 the average particle size;

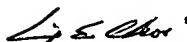
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the average particle size is preferably 100 microns to less than 600 microns (abstract; col. 2, lines 30-51). However, Benedikt et al. do not teach or fairly suggest a process comprising (A) a step of melting, kneading, molding, and pulverizing the solid into powder (claim 1) and (B) a step of chlorination at above the crystal melting start temperature and more than 10°C below the crystal melting peak temperature of the polyolefin before the heat treatment (claims 2-6).

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.



LING-SUI CHOI
PRIMARY EXAMINER

June 15, 2007